SOP No. EM - 02		Page 1 of 4
Title: Collection of Roto-rod Samples		
Revision: #4	**Replaces: 3/27/02 version**	**Effective: 2/13/03**

1. Purpose and Scope: Roto-rods are used to measure droplets of pesticide in the air. The roto-rod itself is attached to an electric motor which spins the roto-rod at a metered speed (about 2400 rpm). The spinning roto-rod impacts any small droplets passing through its air space, the droplets stick to the roto-rod. When sent to the lab for analysis, the amount of pesticide in a given volume of air, during the time collected, can be determined. This SOP describes how to handle, place, collect, store and ship roto-rod samples. Any instructions on roto-rod sampling and documentation found in the Environmental Monitoring Plan (EMP) for the Program under study, supersedes instructions contained in this SOP.

2. Supplies Required: To request sampling equipment and other supplies required to collect roto-rod samples, contact the Laboratory Supplies Coordinator at the APHIS Analytical and Natural Products Chemistry Laboratory (ANPCL), in Gulfport, MS at (228) 822-3106 (for address see SOP EM - 17, *Packaging and Shipping of Samples*).

2.1 2 roto-rod motors (with PVC cap affixed and cotter pin) and wire harnesses

2.2 2, 5-foot lengths of conduit, each drilled to accommodate a roto-rod motor, and 2 additional 5-foot lengths of conduit and joiners for extensions if needed

2.3 push cart with mountings for 2 conduit poles

2.4 one fully charged 12V car or motorcycle battery

2.5 a sufficient number of roto-rods to complete the days sampling

2.6 dykes (heavy wire cutters)

2.7 10 x 100 mm screw-capped culture tubes

2.8 parafilm

2.9 baby wipes

2.10 12"x 12" resealable plastic bags

2.11 field log book

2.12 ice chest with wet, dry or blue ice (obtain locally)

2.13 environmental monitoring forms (APHIS Form 2060)

2.14 indelible marker

2.15 wind gauge, compass and thermometer.

3. Placement of Roto-rods:

3.1 select the location for placement of the roto-rods as instructed in the EMP

3.2 place the push cart at the selected location and place the 2 conduit poles that have holes drilled in them into the mountings on the push cart, so that the end with the holes is up

3.3 on top of each conduit pole attach a roto-rod motor by placing the PVC cap over the end of the pole. Line up the holes in the PVC cap and the conduit pole and insert the cotter pin

3.4 attach a wire harness to each roto-rod motor. Cover the motor with a plastic bag (cut a hole in the bag so that the drive shaft is exposed) in order to minimize exposure of the motor to pesticide

3.5 unseal the resealable plastic bag in which the roto-rod is packed. While still in the bag, attach the roto-rod to the roto-rod motor (be careful not to touch the roto-rod with anything that might have been in contact with Program chemicals--such as your fingers!). This can be accomplished by holding the roto-rod through the resealable plastic bag it came in, then inserting the roto-rod seat of the motor into the open end of the bag, then push the roto-rod into place in the seat

3.6 repeat step 3.5 for the other roto-rod (roto-rods are always collected in pairs)

3.7 if the samples need to be collected at a height greater than that afforded by one length of the conduit pole, then connect a second conduit pole to the first using the joiner and remount the assembly to the push cart

3.8 set the timer on the bottom of the roto-rod motor to the maximum setting, attach the wire harnesses to the battery to initiate spinning

3.9 the roto-rods should be allowed to spin for the time specified in the EMP. Record the time that the roto-rods started spinning.

4. Collecting Exposed Roto-rods:

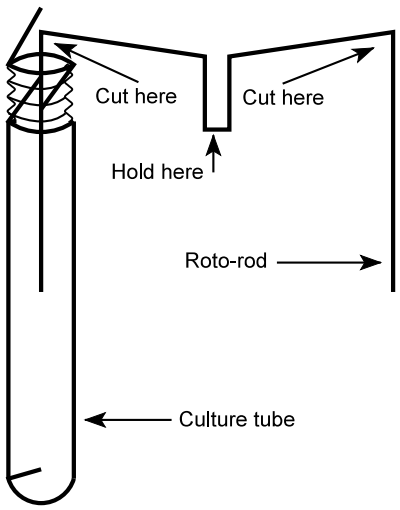
4.1 disconnect the wire harness from the battery and record the time that spinning stops

4.2 label a 10 x 100 mm culture tube with the code specified in the EMP for the roto-rod, using the indelible marker

4.3 remove the roto-rod from the motor by holding it in the center where it is seated in the motor

4.4 insert one end of the roto-rod into the culture tube and cut the roto-rod with the dykes at the elbow of the roto-rod such that the roto-rod post falls into the culture tube (see the figure at right)

4.5 insert the other end of the roto-rod into the same culture tube that contains the first roto-rod post and cut at that elbow as described in 4.4 above



4.6 screw the cap onto the culture tube, wrap the cap and the top inch of the culture tube with stretched parafilm. Squeeze the parafilm to assure an air tight seal. This comprises 1 roto-rod sample

4.7 repeat steps 4.2 through 4.6 for the other roto-rod. Be careful not to touch the posts of the roto-rods with anything but the clean dykes

4.8 after collecting both roto-rod samples, decontaminate the dykes by wiping them down with a baby wipe

4.9 the roto-rod samples sealed in the labeled culture tubes should all be placed into a water-proof container and then into the ice chest for transport and transfer to a freezer.

5. Documentation:

5.1 record all of your observations in the field log book (see SOP EM - 12, *Using a Field Log Book*). Be sure to record the air temperature and humidity during treatment, and the wind speed and direction before, during and after treatment (see SOP EM - 13, *Taking Measurements for the APHIS Form 2060*). Include a sketch of where the roto-rod samples are collected in relation to the treatment site and any sensitive site in the vicinity (an annotated aerial photograph or topographical map of the site would be a great addition, as would photographs or videos taken from ground level). Describe the canopy and understory of any vegetation between the treatment site and the sample collection site, or any other factors that you think might influence the amount of pesticide being captured by the roto-rods. If a roto-rod motor appears to be running slower than its pair, or if it seems to have slowed during the collection, then record this observation.

5.2 complete an APHIS Form 2060 for each roto-rod sample. Retain the pink copy for your records and distribute the remaining copies as specified in the EMP.

6. Packaging and Shipping:

6.1 package and ship the roto-rod samples as described in SOP EM - 17, *Packaging and Shipping of Samples*